REMARKS/ARGUMENTS

In the Office Action mailed December 10, 2009, claims 2-14 were rejected. In response, Applicants hereby request reconsideration of the application in view of the below-provided remarks. No claims are amended, added, or canceled.

Claim Rejections under 35 U.S.C. 102 and 103

Claims 2-14 were rejected based on one or more cited references. The cited reference(s) relied on in these rejections include:

Woo et al. (U.S. Pat. No. 5,408,130, hereinafter Woo)
Momodomi (U.S. Pat. No. 4,881,113, hereinafter Momodomi)
Igel et al. (U.S. Pat. No. 6,204,549, hereinafter Igel)

In particular, claims 2, 3, and 6-14 were rejected under 35 U.S.C. 102(b) as being anticipated by Woo. Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Woo in view of Momodomi. Claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over Woo in view of Igel. However, Applicants respectfully submit that these claims are patentable over Woo, Momodomi, and Igel for the reasons provided below.

Independent Claim 8

Applicants assert that claim 8 is patentable over the cited references because the cited references do not disclose all of the limitations of the claim. Claim 8 recites:

An integrated circuit chip comprising:
at least one integrated circuit; and
an integrated electrostatic discharge protection device, the electrostatic discharge protection device comprising:
an insulating layer disposed on a substrate layer, the insulating layer of an electrically insulating material to form a base layer of a toroidal spark gap cavity;
a first electrically conductive layer disposed on the insulating layer, the first electrically conductive layer of a first

electrically conductive material to form a circumferential electrode with an outer side wall to define a window for the toroidal spark gap cavity;

a dielectric layer disposed on the first electrically conductive layer, the dielectric layer of a dielectric material to form a cover layer of the toroidal spark gap cavity; and

a second electrically conductive layer partially disposed directly on the dielectric layer and extending into the window for the toroidal spark gap cavity to be partially disposed directly on the insulating layer, the second electrically conductive layer of a second electrically conductive material to form a center electrode with an inner side wall that is laterally separated from the outer side wall of the first conductive layer by the toroidal spark gap cavity.

(Emphasis added.)

In contrast, Woo does not disclose an integrated electrostatic discharge (ESD) device with a toroidal spark gap. Rather, Woo is merely directed to an interconnect structure for conductive layers. Woo, abstract. As shown in Fig. 3 of Woo, the interconnect structure includes several conductive layers 14, 18, and 24. The conductive layers are separated by dielectric layers 16 and 20. The conductive layer 24 is formed within an opening that extends through the dielectric layers and the intermediate conductive layer 18, without contacting the intermediate conductive layer. In this way, the conductive layer 24 can form a conductive interconnect between the bottom conductive layer 14 and a top conductive layer (not shown) connected to the conductive layer 24.

Although some of the structure described in Woo appears to be similar to some of the structure recited in the claim of the present application, Woo nevertheless does not disclose any type of integrated ESD device. More specifically, Woo does not disclose a toroidal spark gap cavity. In particular, the internconnect structure of Woo is not a spark gap cavity because the structure of Woo is formed to prevent sparks or other conduction between the intermediate conductive layer 18 and the conductive layer 24 that extends through the opening 19. Specifically, Woo states that the space between the intermediate conductive layer 18 and the conductive layer 24 is filled with a sidewall spacer 22 that is formed as an oxide material, a nitride material, or a like insulator. Thus, the insulator material of the sidewall spacer 22 is intended to prevent all conduction between the

intermediate conductive layer 18 and the conductive layer 24. Moreover, Woo explicitly states that the "conductive layer 18 is isolated [from the other interconnected conductive layers] via the spacer 22." Woo, col. 5, lines 26-29. Thus, the spacer 22 acts to prevent all conduction, including sparks, between the intermediate conductive layer 18 and the conductive layer 24.

Furthermore, even if there were some unexpected conduction through the spacer 22, the device of Woo is not described as being capable of handling an ESD event. In particular, there is no indication in Woo that the interconnect device might be capable of adequately routing ESD current through one of conductive layers, without destroying the device. Additionally, it should be noted that, without further description to show how the insulating spacer 22 of Woo might conduct electricity in an ESD event, the insulating spacer 22 appears to actually inhibit ESD protection because the insulating spacer would significantly increase the amount of charge that might build up to unacceptably high levels within the device before any type of discharge might occur through a path that is capable of handling the ESD current. Thus, the presence of the insulating spacer 22 in the device of Woo would actually make the device of Woo function more poorly, if at all, in response to an ESD event.

For the reasons presented above, Woo does not disclose all of the limitations of the claim because Woo does not disclose an integrated ESD device with a toroidal spark gap, as recited in the claim. Accordingly, Applicants respectfully assert claim 8 is patentable over Woo because Woo does not disclose all of the limitations of the claim.

Independent Claim 7

Applicants respectfully assert independent claim 7 is patentable over the cited reference at least for similar reasons to those stated above in regard to the rejection of independent claim 8. The claim recites subject matter which is similar to the subject matter of claim 8 discussed above. Although the language of these claims differs somewhat, and the scope of these claims should be interpreted independently of each other and other claims, Applicants respectfully assert that the remarks provided above in regard to the rejection of claim 8 also apply to the rejection of claim 7.

Dependent Claims

Claims 2-6 and 9-14 depend from and incorporate all of the limitations of the corresponding independent claims 8 and 7. Applicants respectfully assert claims 2-6 and 9-14 are allowable based on allowable base claims. Additionally, each of claims 2-6 and 9-14 may be allowable for further reasons.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-4019** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-4019** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

/mark a. wilson/

Date: February 10, 2010

Mark A. Wilson
Reg. No. 43,994

Wilson & Ham
PMB: 348
2530 Berryessa Road
San Jose, CA 95132
Phone: (925) 249-1300
Fax: (925) 249-0111